

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵: G09F 3/08, H04B 1/59	A1	(11) International Publication Number: WO 94/28531 (43) International Publication Date: 8 December 1994 (08.12.94)
(21) International Application Number: PCT/FI94/00201 (22) International Filing Date: 19 May 1994 (19.05.94) (30) Priority Data: 932340 21 May 1993 (21.05.93) FI (71) Applicant (for all designated States except US): IDESCO OY [FI/FI]; Teknologiantie 8, FIN-90570 Oulu (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): ELSILÄ, Marti [FI/FI]; Mataratie 18 D 3, FIN-90580 Oulu (FI). (74) Agent: TEKNOPOLIS KOLSTER OY; C/O Oy Kolster Ab, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).		(81) Designated States: CA, JP, RU, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>
(54) Title: MOUNTING DEVICE FOR AN ESCORT MEMORY (57) Abstract <p>The present invention relates to a mounting device for fastening an escort memory (2) to an essentially tubular object (6), such as the core of a paper reel, which mounting device (1) is made of essentially flexible material and comprises means for fastening the escort memory to the device. For achieving a well protected installation and firm fastening, the flexible mounting device (1) can be compressed or bent sufficiently to be entirely fitted into the tubular object (6). The compressed or bent mounting device (1) fitted into the tubular object behaves in a spring-like manner, tending to return to its original shape, whereby the mounting device presses against the inner surface of the tubular object (6) so as to fasten the mounting device to the tubular object.</p> <div data-bbox="938 1182 1339 1549"></div> <div data-bbox="889 1833 1367 1875"><p>BEST AVAILABLE COPY</p></div>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

Mounting device for an escort memory

5 The present invention relates to a mounting device for fastening an escort memory to an essentially tubular object, such as the core of a paper reel, which mounting device is made of essentially flexible material and comprises means for fastening the escort memory to the device.

10 In this application, an escort memory refers to a unit which preferably comprises a transmitter, a receiver and a memory circuit, the data contained therein being machine readable by means of a signal sent by the transmitter. The data contained in the escort memory can be read through all non-metallic objects. A typical
15 reading distance varies between 5 and 50 cm depending on the antenna used. The components of the escort memory can be encapsulated in many different ways, for example by packing them into an epoxy disc or capsule. An escort memory capsule of this kind is typically 10 to 20 mm
20 long and 2 to 3 mm thick.

 The escort memory can be used for storing predetermined data, for example data needed for identifying a paper reel. When the escort memory is brought to the vicinity of a reading device, the receiver of the escort
25 memory detects the low-frequency (inductive or microwave) identification request signal sent by the read head. The escort memory responds to this signal by inductively transmitting the identification data stored in the memory circuit to the read head. Escort memories
30 are previously known, and their operation has been described for example in Finnish Patent 85,079, and therefore their operation is not described in more detail in this connection.

 A prior art mounting device for fastening an
35 escort memory is a circular cardboard disc, by means of

which the escort memory is fastened to the end of a paper reel. In said solution the escort memory is fastened to the mounting device for example by glueing. The cardboard disc has a cut-off flap, for example rectangular in shape, with the same width as the inner diameter of the paper reel core. In this connection, the core means the hollow, tubular reel around which paper is wound in the paper mill.

When the above mentioned prior art mounting device is fastened to the paper reel core, said flap is folded 90° down from the level of the cardboard disc and thereby forms a projection to be inserted into the core. As the width of the projection is the same as the inner diameter of the paper reel core, the projection contacts the inner surface of the core when the cardboard disc is installed to the end of the core. Said contact, or primarily the wedging force of the projection, causes the cardboard disc and the escort memory attached to it to stick to the end of the paper reel.

The major disadvantage of the above mentioned prior art mounting device is the fact that herein the escort memory is installed to the end of a paper reel core, or practically level with the end surface of the paper reel. This is a most disadvantageous place for installing the escort memory, because paper reels sometimes receive severe impacts during handling, which causes a risk of damage to the escort memory containing sensitive electronic components. Another significant disadvantage of this prior art solution is the fact that the inner diameter of paper reel cores is not standardized, but cores of different sizes and widely varying diameters (100 to 200 mm) are being used. The situation being this, there has to be a separate escort memory mounting device for each core size. A third significant disadvantage in connection with this prior art solution

is the poor fastening between the mounting device and the core. That is to say, the fastening of the escort memory mounting device to the paper reel is dependent on the wedging force of the mounting device against the inner surface of the core. The shape of this prior art mounting device is very disadvantageous in view of the wedging force. In practice, the fastening cannot be improved by increasing the width of the projection, because then there is a danger that the projection or flap would break at the fold upon insertion into the paper reel core, which would further weaken the fastening between the projection and the core.

The object of the present invention is to solve the above mentioned problems and to provide an escort memory mounting device which is not dependent on the inner diameter of the paper reel core and by means of which the escort memory can be fastened simply and firmly to a place where it is not damaged. These objects are achieved with a mounting device according to the invention, which is characterized in that the flexible mounting device can be compressed or bent sufficiently, enabling the device to be entirely fitted into the tubular object, and that the compressed or bent mounting device fitted into the tubular object behaves in a spring-like manner, tending to return to its original shape, whereby the mounting device presses against the inner surface of the tubular object so as to fasten the mounting device to the tubular object.

The invention is based on the idea that the mounting device is far better attached to the paper reel core when the mounting device is made of flexible or elastic material and shaped in such a way that it can be compressed or bent in a spring-like manner and entirely fitted into the paper reel core, and fastened to it by means of forces caused by the spring-like beha-

viour of the mounting device. Hereby both the mounting device and the escort memory fastened to it are very well protected against external impacts.

5 Thus the major advantage of the mounting device according to the invention is the fact that the mounting device and the escort memory fastened to it are very well protected against external impacts when disposed within the paper reel core. Another advantage achieved with the mounting device according to the invention is
10 the fact that a mounting device of one size can be used for cores with different inner diameters. This is due to the fact that the mounting device can be compressed or bent, whereby the variations in the inner diameters of the cores can be compensated for by adjusting compression or bending.
15

In one preferred embodiment, the mounting device according to the invention is rectangular in shape and thus its width and length are different. The rectangular shape enables installation of the mounting device
20 within the paper reel core in two alternative directions, i.e. the mounting device can be bent or compressed in the direction of either its width or its length. This preferred embodiment according to the invention provides the advantage that the same mounting device can
25 be used for cores which have substantially different inner diameters.

In another preferred embodiment, the mounting device according to the invention comprises a weakening area or line, at which the mounting device can be easily
30 broken. Thus the mounting device can be easily adapted to a suitable size if it is to be fastened to a core with such a small diameter that the mounting device cannot be directly compressed or bent sufficiently for installing it in place.

Preferred embodiments of the mounting device according to the invention are disclosed in the attached dependent claims 2 to 6.

5 In the following the invention will be described in more detail by means of a few preferred embodiments with reference to the accompanying Figures, in which

Figure 1 shows a first preferred embodiment of the mounting device according to the invention,

10 Figure 2 shows a mounting device according to Figure 1 as fitted into a paper reel core,

Figure 3 shows a second preferred embodiment of the mounting device according to the invention,

15 Figure 4 shows a third preferred embodiment of the mounting device according to the invention, and

Figure 5 shows a fourth preferred embodiment of the mounting device according to the invention.

Figure 1 shows an escort memory mounting device 1 according to the invention. This mounting device is made of some flexible material, such as cardboard or plastic. An escort memory capsule 2 is fastened to the mounting device 1 by means of plastic fasteners 5. The fasteners 5 are attached to the mounting device 1 by means of a snap joint. Naturally, the escort memory capsule 2 can also be fastened to the mounting device 1 by some other means, for example by disposing a flexible plate over the escort memory capsule so that the escort memory capsule 2 is entirely covered by the flexible plate, whereafter said plate is riveted to the mounting device 1, thus causing the escort memory capsule to remain in the pocket between the mounting device and said plate.

30 The mounting device shown in Figure 1 is rectangular in shape, and its longitudinal sides 4 and transverse sides 3 are of different length. Thus the

mounting device 1 of Figure 1 can be used in paper reel cores which have widely varying inner diameters. When the core has a very large inner diameter, the mounting device is fitted into it with its longitudinal side first, and when the core has a small inner diameter, the mounting device is fitted into it with its transverse side first.

Figure 2 shows a mounting device 1 according to Figure 1 fitted in place into the paper reel core 6. Figure 2 shows the end of the core from above, and the mounting device 1 fitted into the core. The core shown in Figure 2 has a relatively small inner diameter, and therefore the mounting device 1 has been fitted into it with its transverse side first. Thus the longitudinal sides 4 shown in Figure 1 are directed upwards and downwards in Figure 2 so as to contact the inner surface of the core 6. Figure 2 shows clearly that the mounting device 1 is bent into a curved shape before it is fitted in place. Thus the mounting device 1 and the escort memory 2 attached to it by fasteners remain in place in the core 6 due to the press forces caused by the bending. In the embodiment according to Figure 2, the mounting device 1 is firmly fastened to the core 6, due to the press forces and the relatively long longitudinal sides 4 of the mounting device 1, which are in contact with the inner surface of the paper reel core, and thus there is a considerable friction between the sides of the mounting device and the inner surface of the core.

Figure 3 shows a second preferred embodiment of the mounting device according to the invention, in which the mounting device is a flexible plastic tube 7. Figure 3 shows a longitudinal section of the plastic tube 7. The escort memory capsule 2 is fastened within the plastic tube 7 for example by glueing.

5 The mounting device 7, i.e. plastic tube, shown in Figure 3, is fastened to the paper reel core in the same way as the mounting device according to Figure 2: it is bent and fitted into the core transversely in relation to the longitudinal axis of the core.

10 Figure 4 shows a third preferred embodiment of the mounting device according to the invention, in which the mounting device is a compressible rubber bar 9. The mounting device according to Figure 4 is installed in place in the same way as the mounting device according to Figure 3: it is compressed or bent so that it can be fitted into the paper reel core. The fastening of the rubber bar to the paper reel core is improved by mounting spikes 8 disposed at the ends of the bar, which
15 spikes at least partly sink into the inner walls of the core, thus improving the fastening of the mounting device 9. The rubber bar according to Figure 4 can naturally also be used without the mounting spikes.

20 In Figure 4, the escort memory capsule 2 is fastened to the mounting device 9 by means of a plastic film 10 wrapped around the mounting device 9 and the escort memory capsule 2.

25 Figure 5 shows a fourth preferred embodiment of the mounting device according to the invention, in which the mounting device is a plastic tube 7 like the one shown in Figure 3. Figure 5 shows a longitudinal section of the plastic tube 7. The escort memory capsule 2 is fitted into the plastic tube 7 and fastened to it by glueing, for example. A weakening groove 11 has been
30 made during manufacturing in the plastic tube shown in Figure 5. Said weakening groove encircles the whole tube, and the plastic tube 7 can be broken at the groove if necessary. Breaking may be necessary if said mounting device 7 must be fitted into a paper reel core which has
35 a small inner diameter, and the mounting device 7 does

not bend sufficiently to be fitted in. The mounting device 7 can then be broken to a suitable length before it is bent and installed in place. The weakening groove 11 on the mounting device is preferably designed so that the mounting device can be broken manually without tools.

The accompanying Figures and the description relating thereto are intended only to illustrate the present invention. The details of the mounting device according to the invention can vary within the scope of the attached claims. Thus it is to be understood that although in the above description the invention has been illustrated mainly by means of an escort memory capsule, the components of the escort memory can naturally also be encapsulated in some other way, such as in a cast epoxy disc. The mounting device according to the invention can naturally also be used for fastening the escort memory to other tubular objects and not only to paper reel cores.

Claims

1. A mounting device for fastening an escort memory (2) to an essentially tubular object (6), such as the core of a paper reel, which mounting device (1, 7, 9) is made of essentially flexible material and comprises means (5, 10) for fastening the escort memory to the device, c h a r a c t e r i z e d in that the flexible mounting device (1, 7, 9) can be compressed or bent sufficiently, enabling the device to be entirely fitted into the tubular object (6), and that the compressed or bent mounting device (1, 7, 9) fitted into the tubular object behaves in a spring-like manner, tending to return to its original shape, whereby the mounting device presses against the inner surface of the tubular object (6) so as to fasten the mounting device to the tubular object.

2. A mounting device according to Claim 1, c h a r a c t e r i z e d in that the mounting device (1) is formed as a rectangular plate in which the length of its longitudinal sides (4) differs from the length of its transverse sides (3).

3. A mounting device according to Claim 2, c h a r a c t e r i z e d in that the mounting device (1) comprises a weakening line, whereby the external dimensions of the mounting device (1) can be reduced by breaking the mounting device along the weakening line.

4. A mounting device according to Claim 1, c h a r a c t e r i z e d in that the mounting device is formed of an elongated tube (7) or bar (9).

5. A mounting device according to Claim 4, c h a r a c t e r i z e d in that the mounting device (7) comprises a weakening groove (11), whereby the external dimensions of the mounting device can be reduced by breaking the mounting device at the groove (11).

10

6. A mounting device according to any one of claims 1 to 5, characterized in that the mounting device (1, 7, 9) comprises means (8) which at least partly sink into the inner surface of the tubular object (6) when the mounting device is fastened to it.

5

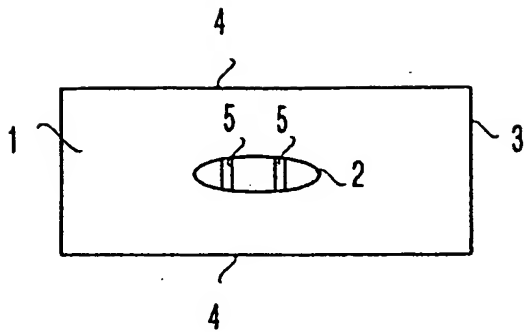


FIG. 1

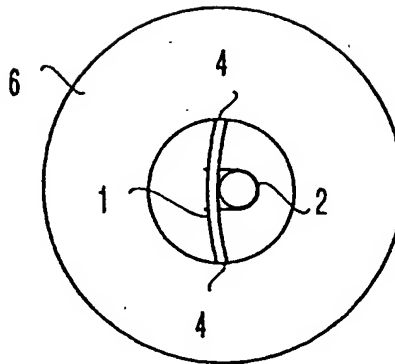


FIG. 2

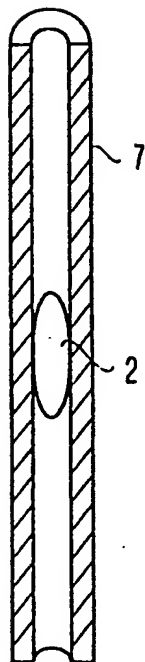


FIG. 3

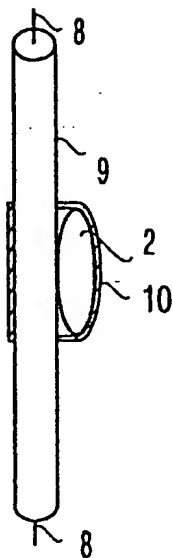


FIG. 4

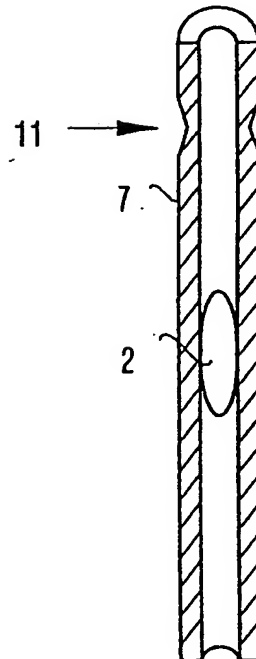


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 94/00201

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: G09F 3/08, H04B 1/59

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC5: G01C, G09F, G11C, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CLAIMS, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4745696 (RAYMOND E. SCOUTEN), 24 May 1988 (24.05.88), figure 2 --	1
A	US, A, 1738378 (JOHN W. LITTLE), 3 December 1929 (03.12.29), figure 2 -----	1

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

26 August 1994

Date of mailing of the international search report

31-08-1994

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Bo Gustavsson
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT
Information on patent family members

02/07/94

International application No.
PCT/FI 94/00201

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US-A-	4745696	24/05/88	CA-A- 1254740	30/05/89
US-A-	1738378	03/12/29	NONE	

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☒ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.